UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,830	12/29/2005	Shingo Kikuchi	Q91798	6478

23373 7590 12/01/2006

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
CHEN, JUNPENG	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/562,830	KIKUCHI ET AL.	
	Examiner	Art Unit	
	Junpeng Chen	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/29/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement submitted on December 29, 2005 has been considered by the Examiner and made of record in the application file.

Preliminary Amendment

3. The present Office Action is based upon the original patent application filed on December 29, 2005 as modified by the preliminary amendment filed on December 29, 2005. **Claims 1 - 19** are now pending in the present application.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 5-6 and **13-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Takano et al. (U.S. PGPub 2002/0173312 A1)** in view of **Miyoshi et al. (U.S. Patent 6,788,737 B1)**.

Consider **claim 1**, Takano discloses a radio communication system comprising first and second radio communication apparatuses which can communicate with each other by radio *(read as the mobile station, base station and mobile communication system, Figures 1-3 and 12)*,

wherein said first radio communication apparatus comprises *(read as mobile station, Figure 3)*:

a propagation path quality estimator which outputs, as propagation path quality information, a result of estimation of quality of the propagation path to said second radio communication apparatus on the basis of the signal from said second radio communication apparatus *(read as reception quality measurement unit 28 measures the reception quality of the common pilot signal (from base station) from the user information-control information separation unit 24, and outputs the measurement result to the combination unit 29, then to the transmission unit 30, Figure 3, paragraphs [0076]-[0082])*; and

transmitting means for transmitting the propagation path quality information together with a data signal to said second radio communication apparatus *(read as transmission unit 30 would transmit the combined signal from the combination unit 29 to base station, which the combined signal includes user information, reception error notification from error detection unit 27, control signal from control unit 25, and reception quality information from reception quality measurement unit 28, Figure 3, paragraphs [0076]-[0082])*,

and wherein said second radio communication apparatus *(read as the base station, Figure 2)* comprises:

a transmission mode selector which includes a plurality of tables in which a plurality of transmission modes each having a threshold value corresponding to a value of the propagation path quality information are registered *(read as modulation-coding*

mode switch selection unit 15, which the modulation/encoding mode to be selected is determined by comparing the reception quality of a pilot signal with a plurality of threshold values stored in the threshold value table in the modulation-coding mode switch selection unit 15, Figures 2 and 4, paragraphs [0072]-[0074], and [0083]-[0085]),

However, Takano fails to discloses said first radio communication apparatus comprises a propagation path environment estimator which outputs, as propagation path environment information, a result of estimation of an environment of a propagation path to said second radio communication apparatus on the basis of a signal from said second radio communication apparatus; transmitting means for transmitting propagation path environment information; and transmission mode selector selects one of said plurality of tables in accordance with the propagation path environment information, and selects, as a mode for transmission to said first radio communication apparatus, one of the transmission modes registered in the selected table in accordance with the propagation path quality information.

Nonetheless, in related art, Miyoshi discloses a communication system having a modulation selecting method, where the communication terminal apparatus comprises a SIR detection section 205 that detects reception quality using the pilot signals, a fd detection section 206 that detects fd (environment information, such as Doppler frequency), and the decision of a modulation method using thresholds provided according to fd, that is, the method first determine whether it is a high fd or low fd case, then, characteristics of received data (received data when QPSK, 16 QAM or 64 QAM, etc, is applied) with respect to the reception quality of pilot signals are obtained, Figures

4 and 7, lines 40-55 of column 3, and line 43 of column 5 to 50 of column 6. Given the teachings by Miyoshi above, a person would ordinary skill in the art would modified the teachings of Takano to making Takano's mobile station to have a reception quality detector and a environment information detectors for gathering necessary information for the decision of modulation selection, and narrow down the selection choices by identifying a fd case first, then use reception quality to identify a corresponding modulation method.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Miyoshi into the teachings of Takano so that Takano would be reliably decide the modulation method which is fastest, lines 25-26 of column 7 by Miyoshi.

Consider **claim 2**, **as applied to claim 1 above**, Takano, as modified by Miyoshi, further discloses a radio communication system wherein said first radio communication apparatus comprises an error detector which detects an error in the signal from said second radio communication apparatus and outputs the error as an error detection result *(read as the error detection unit 27 determines the presence/absence of a reception error in each data block of the HS-PDSCH decoded by the demodulation-decoding unit 26 using the CRC code added to each data block, and outputs the determination result to the combination unit 29, Figure 3, paragraph [0081])*,

wherein said transmitting means transmits the propagation path environment information, propagation path quality information, and error detection result together with a data signal to said second radio communication apparatus *(read as transmission*

unit 30 would transmit the combined signal from the combination unit 29 to base station, which combined signal includes user information, reception error notification from error detection unit 27, control signal from control unit 25,reception quality information from reception quality measurement unit 28, and a environment information signal from a fd detector (after modified by Miyoshi), Figure 3, paragraphs [0076]-[0082] by Takano), and

wherein said transmission mode selector of said second radio communication apparatus rewrites, in accordance with the error detection result, a threshold value registered in the table to correspond to the selected transmission mode *(read as the threshold variable control unit 15c variably controls a plurality of thresholds stored in the threshold table 15b based on the contents of the reception error notification from the error detection unit 27 of the mobile station 2 separated by the user information-control information separation unit 14, Figures 2 and 3, paragraph [0085]).*

Consider **claim 5**, **as applied to claim 1 above**, Takano, as modified by Miyoshi, discloses wherein a maximum Doppler frequency is used as the propagation path environment information (read as after incorporated the teachings by Miyoshi into the teachings of Takano as above, fd detection section 206 detects fd (Doppler frequency), lines 46-55 of column 3 by Miyoshi).

Consider **claim 6**, **as applied to claim 5 above**, Takano, as modified by Miyoshi, discloses the claimed invention above but fails to specifically discloses wherein a plurality of tables correspond to maximum Doppler frequencies f0, f1, . . ., fR-1 and, with respect to a threshold value xi, if a maximum Doppler frequency fd is $xj-1<fd\leq xj$ fj

is selected as the maximum Doppler frequency, if fd≤x0, f0 is selected as the maximum Doppler frequency, and if fd>xR-2, fR-1 is selected as the maximum Doppler frequency.

Nonetheless, the Examiner takes Office Notice of the fact that by using Doppler frequency as environment information, designing a plurality of tables as claimed is within the capabilities of a person with ordinary skill in the art.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to design a plurality of tables as claimed so that no matter what the Doppler frequency would be, there would be a table that would be match to it.

Consider **claim 13, as applied to claim 1 above**, Takano, as modified by Miyoshi, discloses wherein a signal-to-interference ratio is used as the propagation path quality information *(read as after incorporated the teachings by Miyoshi into the teachings of Takano as above, SIR detection section 205 detects reception quality (e.g. SIR), Figure 3, line 46-55 of column 3 by Miyoshi).*

Consider **claim 14, as applied to claim 1 above**, Takano, as modified by Miyoshi, discloses a SIR detection section 205 detects reception quality (e.g. SIR) but fails to discloses wherein a signal-to-noise ratio is used as the propagation path quality information.

Nonetheless, the Examiner takes Office Notice of the fact that signal-to-ratio (S/N) is being widely used in the art to evaluate signal quality.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to use signal-to-ratio as reception quality since the

applicant has not disclosed that using signal-to-ratio instead of signal-to-interference solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well in either case.

Consider **claims 15 to 17, as applied to claim 2 above**, Takano, as modified by Miyoshi, further discloses wherein a modulation technique is used as a parameter of a transmission mode as in claim 15, wherein an encoding ratio is used as a parameter of a transmission mode as in claim 16, and wherein a transmission power is used as a parameter of a transmission mode 17 *(read as each of the modulation-coding modes is a combination of any of a plurality of modulation modes such as the QPSK (Quadrature Phase Shift Keying) for transmitting two bits (four values) in one modulating process, the 16QAM (16 Quadrature Amplitude Modulation) for transmitting four bits (sixteen values) in one modulating process, the 64QAM (64 Quadrature Amplitude Modulation) for transmitting six bits (sixty-four values) in one modulating process, etc. and any of a plurality of coding modes such as the 3/4 rate error correction code having the redundancy of the ratio of 4/3 of a total number of bits to information bits with a check bit added, the 1/2 rate error correction code having the redundancy of the ratio of 2/1 of a total number of bits to information bits, etc. And another method for selecting any of the modulation-coding modes can be a method of selecting a modulation-coding mode corresponding to the transmission power of an individual signal by determining as a prefixed threshold the range of the transmission power of the individual signal of a DPCH (Dedicated Physical Channel) of the downlink from the base station to the mobile station, paragraphs [0006] and [0009] by Takano).*

Consider **claim 18**, Takano discloses a transmission mode selection method performed in a radio communication system comprising first and second radio communication apparatuses which can communicate with each other by radio *(read as the mobile station, base station and mobile communication system, Figures 1-3 and 12)*, wherein the method comprises:

a step of, performed by the first radio communication apparatus, of estimating propagation path quality information indicating quality of the propagation path to the second radio communication apparatus on the basis of the signal from the second radio communication apparatus *(read as reception quality measurement unit 28 measures the reception quality of the common pilot signal (from base station) from the user information-control information separation unit 24, and outputs the measurement result to the combination unit 29, then to the transmission unit 30, Figure 3, paragraphs [0076]-[0082])*;

a step of, performed by the first radio communication apparatus, of transmitting the propagation path quality information together with a data signal to the second radio communication apparatus *(read as transmission unit 30 would transmit the combined signal from the combination unit 29 to base station, which the combined signal includes user information, reception error notification from error detection unit 27, control signal from control unit 25, and reception quality information from reception quality measurement unit 28, Figure 3, paragraphs [0076]-[0082]);* and

a transmission mode selector which includes a plurality of tables in which a plurality of transmission modes each having a threshold value corresponding to a value

of the propagation path quality information are registered *(read as modulation-coding mode switch selection unit 15, which the modulation/encoding mode to be selected is determined by comparing the reception quality of a pilot signal with a plurality of threshold values stored in the threshold value table in the modulation-coding mode switch selection unit 15, Figures 2 and 4, paragraphs [0072]-[0074], and [0083]-[0085])*,

However, Takano fails to disclose a step of, performed by the first radio communication apparatus, of estimating propagation path environment information indicating an environment of a propagation path to the second radio communication apparatus on the basis of a signal from the second radio communication apparatus; transmitting the propagation path environment information; and a step of, performed by the second radio communication apparatus, of selecting, in accordance with the propagation path environment information, one of a plurality of tables in each of which a plurality of transmission modes each having a threshold value corresponding to a value of the propagation path quality information are registered, and selecting, as a mode for transmission to the first radio communication apparatus, one of the transmission modes registered in the selected table in accordance with the propagation path quality information.

Nonetheless, in related art, Miyoshi discloses a communication system having a modulation selecting method, where the communication terminal apparatus comprises a SIR detection section 205 that detects reception quality using the pilot signals, a fd detection section 206 that detects fd (environment information, such as Doppler frequency), and the decision of a modulation method using thresholds provided

according to fd, that is, the method first determine whether it is a high fd or low fd case, then, characteristics of received data (received data when QPSK, 16 QAM or 64 QAM, etc, is applied) with respect to the reception quality of pilot signals are obtained, Figures 4 and 7, lines 40-55 of column 3, and line 43 of column 5 to 50 of column 6. Given the teachings by Miyoshi above, a person would ordinary skill in the art would modified the teachings of Takano to making Takano's mobile station to have a reception quality detector and a environment information detectors for gathering necessary information for the decision of modulation selection, and narrow down the selection choices by identifying a fd case first, then use reception quality to identify a corresponding modulation method.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Miyoshi into the teachings of Takano so that Takano would be reliably decide the modulation method which is fastest, lines 25-26 of column 7 by Miyoshi.

Consider **claim 19**, Takano discloses a transmission mode selection method performed in a radio communication system comprising first and second radio communication apparatuses which can communicate with each other by radio *(read as the mobile station, base station and mobile communication system, Figures 1-3 and 12)*, wherein the method comprises:

a step of, performed by the first radio communication apparatus, of estimating propagation path quality information indicating quality of the propagation path to the second radio communication apparatus on the basis of the signal from the second radio

communication apparatus *(read as reception quality measurement unit 28 measures the reception quality of the common pilot signal (from base station) from the user information-control information separation unit 24, and outputs the measurement result to the combination unit 29, then to the transmission unit 30, Figure 3, paragraphs [0076]-[0082])*;

a step of, performed by the first radio communication apparatus, of obtaining an error detection result indicating an error in the signal from the second radio communication apparatus *(read as the error detection unit 27 determines the presence/absence of a reception error in each data block of the HS-PDSCH decoded by the demodulation-decoding unit 26 using the CRC code added to each data block, and outputs the determination result to the combination unit 29, Figure 3, paragraph [0081])*;

a step of, performed by the first radio communication apparatus, of transmitting the propagation path quality information, and error detection result together with a data signal to the second radio communication apparatus *(read as transmission unit 30 would transmit the combined signal from the combination unit 29 to base station, which the combined signal includes user information, reception error notification from error detection unit 27, control signal from control unit 25, and reception quality information from reception quality measurement unit 28, Figure 3, paragraphs [0076]-[0082])*; and

a transmission mode selector which includes a plurality of tables in which a plurality of transmission modes each having a threshold value corresponding to a value of the propagation path quality information are registered *(read as modulation-coding mode switch selection unit 15, which the modulation/encoding mode to be selected is*

determined by comparing the reception quality of a pilot signal with a plurality of threshold values stored in the threshold value table in the modulation-coding mode switch selection unit 15, Figures 2 and 4, paragraphs [0072]-[0074], and [0083]-[0085]), and rewriting, in accordance with the error detection result, a threshold value registered in the table to correspond to the selected transmission mode *(read as the threshold variable control unit 15c variably controls a plurality of thresholds stored in the threshold table 15b based on the contents of the reception error notification from the error detection unit 27 of the mobile station 2 separated by the user information-control information separation unit 14, Figures 2 and 3, paragraph [0085])*.

However, Takano fails to discloses disclose a step of, performed by the first radio communication apparatus, of estimating propagation path environment information indicating an environment of a propagation path to the second radio communication apparatus on the basis of a signal from the second radio communication apparatus; transmitting the propagation path environment information; and a step of, performed by the second radio communication apparatus, of selecting, in accordance with the propagation path environment information, one of a plurality of tables in each of which a plurality of transmission modes each having a threshold value corresponding to a value of the propagation path quality information are registered.

Nonetheless, in related art, Miyoshi discloses a communication system having a modulation selecting method, where the communication terminal apparatus comprises a SIR detection section 205 that detects reception quality using the pilot signals, a fd detection section 206 that detects fd (environment information, such as Doppler

frequency), and the decision of a modulation method using thresholds provided according to fd, that is, the method first determine whether it is a high fd or low fd case, then, characteristics of received data (received data when QPSK, 16 QAM or 64 QAM, etc, is applied) with respect to the reception quality of pilot signals are obtained; Figures 4 and 7, lines 40-55 of column 3, and line 43 of column 5 to 50 of column 6. Given the teachings by Miyoshi above, a person would ordinary skill in the art would modified the teachings of Takano to making Takano's mobile station to have a reception quality detector and a environment information detectors for gathering necessary information for the decision of modulation selection, and narrow down the selection choices by identifying a fd case first, then use reception quality to identify a corresponding modulation method.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Miyoshi into the teachings of Takano so that Takano would be reliably decide the modulation method which is fastest, lines 25-26 of column 7 by Miyoshi.

Claims 3-4 and **7-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Takano et al. (U.S. PGPub 2002/0173312 A1)** in view of **Miyoshi et al. (U.S. Patent 6,788,737 B1)** as applied to claim 1 above, and in further view of **Nakano et al. (U.S. Patent 5,873,028)**.

Consider **claim 3**, **as applied to claim 1 above**, Takano, as modified by Miyoshi, discloses a environment information detector (fd detect section 206) that

detects environment information such as Doppler frequency, but fails to specifically discloses the environment information detector would detect path count as the propagation path environment information.

Nonetheless, in related art, Nakano discloses a transmission power control scheme which comprising a reception path number and fading pitch measurement unit 24a for measuring path number and fading pitch of the reception and use the measurements for controlling the transmission power, Figure 5, lines 42-52 of column 6. Given the teachings by Nakano, a person with ordinary skill in the art would be able to modify the environment information detector by Takano, which modified by Miyoshi, to use any one of Doppler frequency, path number, fading pitch, or any combination of these three as environment information of the propagation path to help selecting modulation method because Doppler frequency, path number, fading pitch are just environment information of the propagation path, the use of any one or any combination of them is only a matter of design choice.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Nakano into the teachings of Takano, which modified by Miyoshi, because the use of any one of Doppler frequency, path number, fading pitch, or any combination of them is only a matter of design choice.

Consider **claim 4**, **as applied to claim 3 above**, Takano, as modified by Miyoshi and Nakano, disclosed the claimed invention above but fails to specifically discloses that wherein a plurality of tables corresponding to path counts P1, P1, ..., PR.

However, the Examiner takes Office Notice of the fact that when path number is be used as environment information, making the plurality of tables corresponding the path number P1, P2 ... PR is within the capabilities of a person with ordinary skill in the art and it is a common way of sorting the path numbers.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to design a plurality of tables as claimed so that no matter what the path number would be, there would be a table that would match to it.

Consider **claim 7**, **as applied to claim 1 above**, Takano, as modified by Miyoshi, discloses an environment information detector (fd detect section 206) that detects environment information such as Doppler frequency, but fails to specifically discloses the environment information detector would detect delay dispersion as the propagation path environment information.

Nonetheless, in related art, Nakano discloses a transmission power control scheme which comprising a reception path number and fading pitch measurement unit 24a for measuring path number and fading pitch of the reception and use the measurements for controlling the transmission power, Figure 5, lines 42-52 of column 6. Given the teachings by Nakano, a person with ordinary skill in the art would be able to modify the environment information detector by Takano, which modified by Miyoshi, to use any one of Doppler frequency, path number, fading pitch, or any combination of these three as environment information of the propagation path to help selecting modulation method because Doppler frequency, path number, fading pitch are just

environment information of the propagation path, the use of any one or any combination of them is only a matter of design choice.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Nakano into the teachings of Takano, which modified by Miyoshi, because the use of any one of Doppler frequency, path number, fading pitch, or any combination of them is only a matter of design choice.

Consider **claim 8**, **as applied to claim 7 above**, Takano, as modified by Miyoshi and Nakano, disclosed the claimed invention above but fails to specifically discloses that wherein a plurality of tables correspond to delay dispersions $\sigma 0$, σP, . . . , $\sigma q\text{-}1$, and, with respect to a threshold value xi, if a delay dispersion σ is $xj\text{-}1 < \sigma \leq xj$, σj is selected as the delay dispersion, if $\sigma \leq x0$, $\sigma 0$ is selected as the delay dispersion, and if $\sigma > xR\text{-}2$, $\sigma R\text{-}1$ is selected as the delay dispersion.

Nonetheless, the Examiner takes Office Notice of the fact that by using fading pitch as environment information, designing a plurality of tables as claimed is within the capabilities of a person with ordinary skill in the art.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to design a plurality of tables as claimed so that no matter what the fading pitch would be, there would be a table that would match to it.

Consider **claims 9 to 12**, **as applied to claim 1 above**, Takano, as modified by Miyoshi, discloses an environment information detector (fd detect section 206) that

detects environment information such as Doppler frequency, but fails to specifically discloses wherein a plurality of selection tables correspond to combinations of path counts P1, P2, . . . , PJ and maximum Doppler frequencies f0, f1, . . . , fK-1 as in claim 9, wherein a plurality of tables correspond to combinations of path counts P1, P2, . . . , PJ and delay dispersions σ0, σP, . . . , .sigma.k-1 as in claim 10, wherein a plurality of tables correspond to combinations of maximum Doppler frequencies f0 to fK-1 and delay dispersions σ0 to σL-1 as in claim 11, and wherein a plurality of tables correspond to combinations of path counts P1, P2, . . . , PJ, maximum Doppler frequencies f0 to fK-1, and delay dispersions σ0 to σL-1 as in claim 12.

Nonetheless, in related art, Nakano discloses a transmission power control scheme which comprising a reception path number and fading pitch measurement unit 24a for measuring path number and fading pitch of the reception and use the measurements for controlling the transmission power, Figure 5, lines 42-52 of column 6. Given the teachings by Nakano, a person with ordinary skill in the art would be able to modify the environment information detector by Takano, which modified by Miyoshi, to use any one of Doppler frequency, path number, fading pitch, or any combination of these three as environment information of the propagation path to help selecting modulation method because Doppler frequency, path number, fading pitch are just environment information of the propagation path, the use of any one or any combination of them is only a matter of design choice. Also, the Examiner takes Office Notice of the fact that designing a plurality of tables as claimed in each of claims 9-12 is within the capabilities of a person with ordinary skill in the art.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Nakano into the teachings of Takano, which modified by Miyoshi, because the use of any one of Doppler frequency, path number, fading pitch, or any combination of them is only a matter of design choice and design a plurality of tables as claimed in each of claims 9-12 so that no matter which environment information and its value would be, there would be a table that would match to it.

Conclusion

7. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junpeng Chen whose telephone number is (571) 270-1112. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571-272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Junpeng Chen
J.C./jc

November 18, 2006

EDAN ORGAD
PATENT EXAMINER/TELECOMM.

11/19/06